

abscess cavity, so that a second laparotomy was necessary ten days later. Penicillin and streptomycin were continued for two weeks. The wound drained for six weeks, but convalescence was otherwise uneventful. The tympany over the liver disappeared.

COMMENT

The signs usually mentioned as indicative of large hepatic abscesses are enlargement and tenderness of the liver, friction rubs over the hepatic area, bulging and inflammation of the abdominal wall in the right upper quadrant or flank, and fixation of the right diaphragm. To this list may be added tympany over the liver if the abscess contains gas. Although this sign must be rare indeed, it is so striking when present that it may prove to be of diagnostic value, and should be sought when a liver abscess is suspected.

Tuberculous Pericarditis—Treatment with Para-aminosalicylic Acid and Intermittent Streptomycin

Report of a Case

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STREPTOMYCIN is an effective antibiotic in the treatment of tuberculous pericarditis as well as in the treatment of other tuberculous lesions, as described in a number of recently published case reports.^{3,4,6,7} In these cases streptomycin was used in the usual daily regimen consisting of several small doses per day. Recently this regimen has given way to an intermittent method in which the antibiotic is administered in a single large dose at intervals of days to a week, with or without the concurrent administration of such drugs as PAS (para-aminosalicylic acid). The efficacy of the intermittent method has been demonstrated in the treatment of pulmonary^{1,2,8} and laryngeal⁵ tuberculosis. The following case is reported to demonstrate its efficacy in the treatment of tuberculous pericarditis.

In this case PAS was used concurrently. Clinical improvement began immediately after the intramuscular injection of 2 gm. of streptomycin and daily oral administration of PAS. The PAS was stopped after two weeks because of a febrile reaction and granulocytopenia. Therapy was then continued with streptomycin, 2 gm. in each dose, at weekly intervals and convalescence was uneventful.

CASE REPORT

The patient was a 35-year-old Japanese housewife born in Los Angeles. Family history was not significant. Past medical history included an attack of pleurisy at the age of 15. One child was born in 1941.

The present illness began in 1944 when the patient was 30 years of age. At that time she was interned at a California camp for Japanese. In May of that year there was an acute febrile episode and the patient was in bed at the camp hospital for four days. Eight months later she began to cough, lose weight and to have pain of pleural type in the right chest. An infiltration in the upper lobe of the right lung was noted in a roentgenogram. The sputum contained tubercle bacilli. The patient was put to bed in the camp hospital and during the next three months there was a gain in weight from 110 pounds to 126 pounds. In April 1945 the patient was transferred to a Los Angeles County sanatorium. Modified bed rest was continued and the sputum

SUMMARY

Tympany in the center of the area of normal liver dullness characterized a case of gas bacillus abscess of the liver, secondary to empyema of the gallbladder. As far as has been determined, this unusual physical sign has not been previously described.

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was negative for tubercle bacilli. In August 1945 it was noted that the upper lobe of the right lung was atelectatic. The patient's activity was gradually increased.

In April 1946 the sputum again became positive for tubercle bacilli on concentrated smear. Cough increased, the sputum was blood-streaked, and there was slight fever. Bed rest was resumed. In repeated bronchoscopic examinations fibrous stenosis of the right main bronchus with a small area of granulation tissue was noted. Beginning at the end of August 1947 the patient was given a course of streptomycin consisting of 1 gm. daily in five divided doses for 70 days. Planigrams on several occasions in 1947 showed multiple small radiolucent patches in the atelectatic right upper lobe. The sputum remained persistently positive for tubercle bacilli. Therefore, three stages of a right thoracoplasty (seven ribs) were done in October to December of 1947. Following this procedure, the sputum was negative for tubercle bacilli.

Six months later, the sputum again became positive for tubercle bacilli and planigrams on two occasions in 1948 showed multiple radiolucent areas in the atelectatic right upper lobe under the thoracoplasty. Upon bronchoscopic examination the same degree of stenosis of the right main bronchus that had been noted before was observed but there was no active mucosal disease. In December 1948 tubercle bacilli from the patient were determined to be not resistant to streptomycin, so this antibiotic was given again in doses of 0.5 gm. intramuscularly once a day. Seven days later, right upper lobectomy was performed. During the operation the pericardium was inadvertently entered but the wound was repaired without incident. The patient made satisfactory recovery but had a low-grade fever for two weeks after the operation. Thereafter tubercle bacilli were never again isolated from the sputum or gastric washings.

Convalescence was uneventful for five months until May 22, 1949, when the patient began to have fever, dyspnea, a vague pressing pain in the left upper chest on coughing, increased cough with expectoration, and headache. These symptoms became worse during the next four days. Upon examination at that time fever and tachycardia were noted, and there was dyspnea but no cyanosis. Blood pressure was 110 mm. of mercury systolic and 90 mm. diastolic. The pulse was paradoxical. When the patient sat erect there was no venous distention in the neck, but when she lay down, the right external jugular vein became considerably engorged. The chest had the usual deformity of thoracoplasty on the right. The left hemithorax was barrel-shaped. The apex beat of the heart was not palpable. The heart was not ap-

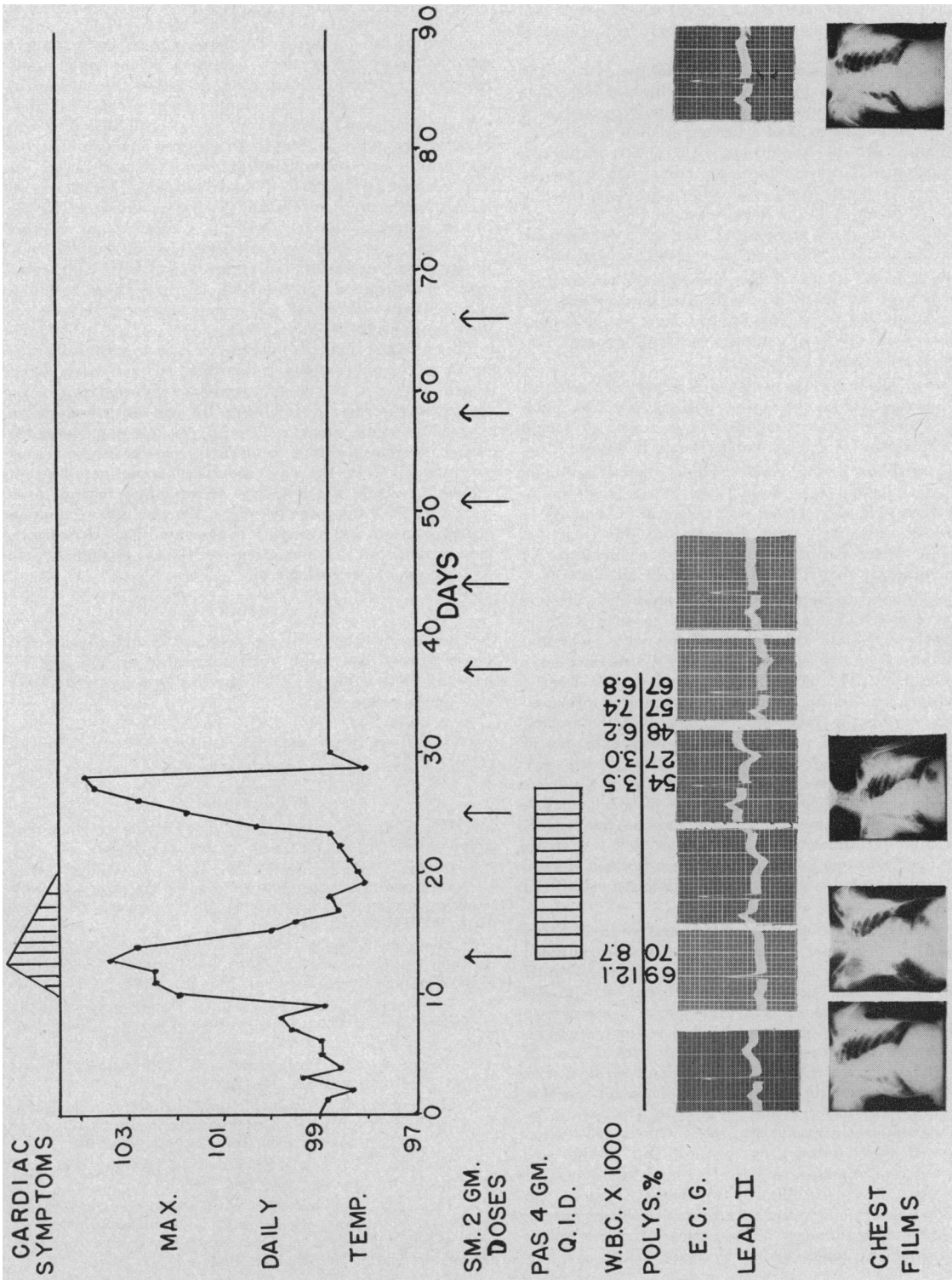


Figure 1.—Course of patient. Note response to one 2-gm. dose of streptomycin and daily oral PAS. Recurrence of fever, associated with granulocytopenia, was not influenced by another dose of streptomycin but disappeared on withdrawal of PAS. Electrocardiographic T-wave changes and heart size returned to normal 90 days after onset of pericarditis.

parently enlarged to percussion. Heart sounds were distant and a friction rub was audible in the midsternal line at the level of the third interspace with the patient supine; this rub almost disappeared when she sat up. The liver was neither palpable nor tender and there was no peripheral edema.

Roentgenograms showed an increase in the size of the heart in all diameters by comparison with previous films and the heart contour was pear-shaped. Fluoroscopy showed feeble cardiac pulsations, and a barium swallow revealed no abnormalities of the esophagus. An electrocardiogram showed flattened T-waves, by comparison with a former tracing, in all standard limb leads and in the six precordial CF leads. Leukocytes in the blood numbered 12,100 per cu. mm., with a normal cell differential. The urine was normal. A series of four daily blood cultures showed no growth.

On the fifth day of this illness, the patient's temperature reached a peak of 103.4° F. Pericardial paracentesis was performed and 250 cc. of blood-tinged fluid was aspirated. This fluid was sterile on culture for both pyogenic organisms and tubercle bacilli.

Following aspiration, the dyspnea was partially relieved, venous engorgement in the supine position was less, pulse pressure increased and paradoxical pulse was no longer noted. The course of the patient is shown in Figure 1.

On the sixth day of this illness friction rub was no longer audible. The patient was given 2 gm. of streptomycin intramuscularly and was started on 16 gm. of PAS daily in four divided doses by mouth. Response to this treatment was prompt. Fever and symptoms subsided in four days. An electrocardiogram showed deep inversion of all T-waves.

The temperature remained normal for seven days and the patient felt much better. She continued to take PAS by mouth without trouble although the stools were somewhat loose. However, on the eleventh day of PAS therapy fever developed again. The next day a second 2 gm. dose of streptomycin was given, but the temperature rose progressively during the following two days and the patient became nauseated and vomited. On the fourteenth day of PAS therapy, leukocytes numbered only 3,500 per cu. mm. On roentgenogram, some decrease in the size of the heart was noted, and the heart sounds were of good quality. There was no recurrence of signs of cardiac tamponade. Twenty cubic centimeters of Pentnucleotide® was given intramuscularly in two doses. An electrocardiogram showed deeper inversion of T-waves. PAS was discontinued with a diagnosis of drug fever and leukopenia.

There was an immediate drop of temperature in 24 hours from 104.2° F. to normal but the leukocyte count continued to be low for two days more and the granulocytes fell to 27 per cent. At the same time the platelet count was 135,000 per cu. mm. The leukocyte and granulocyte count rose to normal levels in three more days and the temperature remained normal. Therapy was continued with 2 gm. of streptomycin once a week for five doses, and 90 days after the onset of the pericarditis the electrocardiographic changes and the heart size had returned to normal. The patient remained asymptomatic except for slight cough and expectoration and slight dyspnea on exertion. Her activity was slowly increased. Sputum and gastric washings remained negative for tubercle bacilli, and the blood sedimentation rate (Linzeneimer) decreased to a normal level during the seven months after the onset of the pericarditis. The patient was discharged to home care in December 1949, one year

after the right upper lobectomy, with a diagnosis of quiescent pulmonary tuberculosis and healed tuberculous pericarditis.

COMMENT

Following an unsuccessful thoracoplasty on a patient with pulmonary tuberculosis, resection of the right upper lobe was performed. During the operation the pericardial sac was broken into. Five months later pericarditis with effusion developed. Although culture of aspirated fluid was negative for tubercle bacilli, it appears probable that the pericarditis was tuberculous and that the pericardial sac was infected at the time of the lobectomy. The efficacy of therapy with streptomycin and PAS was indicated by the prompt response that occurred. It is not certain whether one drug or the other was effective in itself, but the combination was successful. The recurrence of fever with leukopenia is attributed to the PAS, because these reactions subsided when PAS was withdrawn and streptomycin was then continued without incident.

The minimal effective dosage of streptomycin for the treatment of tuberculous pericarditis has not been determined. In one of the cases reported by Johnson and Bercu the patient recovered following 0.1 gm. of streptomycin every four hours for a total of 7.5 gm., although later the patient developed chronic constrictive pericarditis requiring surgical relief. In the case reported herein, improvement followed a single two gm. dose of streptomycin and treatment with PAS for only two weeks. Whether the resumption of streptomycin was necessary to the cure of the pericarditis is uncertain; but if it was necessary, then a dosage schedule of 2 gm. once a week sufficed.

SUMMARY

A patient with tuberculous pericarditis and effusion was successfully treated with para-aminosalicylic acid and intermittent streptomycin. PAS caused a transient drug fever and granulocytopenia.

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